

## **REFERENCE ELECTRODE HAVING A MICROFLUIDIC FLOWING LIQUID JUNCTION**

### **Abstract of the Disclosure**

A flowing junction reference electrode comprises a microfluidic liquid junction member situated between a pressurized reference electrolyte solution and a sample solution. This liquid junction member has an array of nanochannels spanning the member and physically connecting the electrolyte and the sample. While the electrolyte flows through the nanochannels and into the sample, the sample does not substantially enter the nanochannels via diffusion, migration, convection or other mechanisms. The number of nanochannels in the array can be between 10 and  $10^8$ . Preferably, the nanochannels are substantially straight and parallel to one another. The nanochannels can have widths of between 1 and 500 nanometers, and the width of any one nanochannel is substantially equal to the width of any other nanochannel. The member can be manufactured out a polymer such as polycarbonate and polyimide, and may also be made of silicon, glass, or ceramic.

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